

# OBSERVATIONS ON THE LIFE HISTORY OF THE MOTH *ANTHELA XANTHARCA* (MEYRICK)

By MRS. M. B. MILLS, Merredin

On May 6, 1951, while opening up a bag shelter of *Ochrogaster contraria* (Walker), I found a caterpillar which was new to me. It had entered the bag shelter and was living with the bag shelter caterpillars.

Later that week a small number of the new caterpillars were collected on jam trees (*Acacia ucuminata*). Observations showed that they are usually found in wood borers' holes, under dry bark or in cracks in the trees.

A description of the caterpillar is as follows: Head, dark brown. Body, thickly covered with short bristling hairs cinnamon brown in colour along the back with slender grey lateral bands. Grey hairs extending along each side of the body to underparts. Small white dots extending down the body and along each side. Long bristling hairs sparsely scattered about the body.

Specimens were forwarded for identification to the Division of Entomology, C.S.I.R.O., Canberra. Mr. I. F. B. Common replied as follows: "The species with the smooth cocoon is almost certainly *Anthela xantharca* (Meyrick), the original type specimen having been collected by E. Guest at Koolunga, South Australia."

By May 17 five caterpillars were collected on jam trees and placed in a box with wire mesh at the top. During daytime the caterpillars rested on the side of the box or were hidden in a piece of paper at the bottom of the box. In the evening, usually about 7.30 p.m. they would begin to move about in search of food. Fresh jam phyllodes were provided for them. The caterpillars appeared to be contented and thrived in captivity.

Later, during May, five more specimens were collected on jam trees, under bark and in wood-borers' holes. Very fine silken threads leading up the tree indicated the presence of the caterpillars.

By June 6 all of the caterpillars were thriving and had moulted. Two more specimens were collected, one of which was found moving along the ground near the wall of the house, and the other, a larger one, was just under the door.

Next evening, on June 7, a large caterpillar had made a cocoon of a light brown colour and cylindrical shape rather pointed at one end, and this end being attached to the bottom of the box with short silken threads. The other caterpillars continued to feed at evenings, and at intervals cast skins were found in the box. On July 20 another cocoon was made and had been attached by silken threads to the side of the box.

During the days that followed, the caterpillars continued to feed, and cast skins. Some of them were now quite large — over two inches in length.

On a very cold morning in August, a large caterpillar was found moving along the ground and it was collected and placed in the box. On August 27 another cocoon was found attached to a corner of the box, close beside a previously made one. Two other cocoons had also been made alongside the first one. One of them, which was not quite finished, was attached by short silken threads to a jam twig. The cocoon was silvery white in colour and silken in general appearance. The caterpillar could be seen inside the cocoon weaving silken threads about its body. The other cocoon on the side of the box was whitish, but had a paper-like appearance. All of the finished cocoons were darker in colour, one being a dull tan-brown. All cocoons were fastened to some object when made and were firm and papery or like thin card when completely finished. Next morning the silken cocoon was finished and was now darker in colour and papery in appearance like the previous ones.

On August 29, at 7.30 p.m., after a warm, pleasant day, two more cocoons were being made. One caterpillar had just begun and was curled into a half circle in fine silken webbing. The first silken threads which were very fine and shining had been woven and secured to the box. For a short time, while fresh phyllodes were being put into the box, the caterpillar in the cocoon remained motionless. Other caterpillars in the box were busily feeding on phyllodes or resting on the sides of the box.

The caterpillar which was in the other partly-made cocoon remained motionless when disturbed but shortly afterwards began to work on its cocoon again. Both ends of the cocoon appeared somewhat pointed, and there was a round, not quite covered hole, at one end. The caterpillar was curled into a half circle in the cocoon, it using its mouth and forelegs in making the cocoon, weaving to and fro across it from the inside, in a movement like the letter "S". The underpart of the caterpillar being upwards, it would weave from end to end of the cocoon slowly, the head swinging to and fro. This cocoon had been attached to a jam twig.

That evening, other caterpillars in the box appeared to be restless, moving about and travelling around the box, attempting to escape when the lid was removed. However, at 10 p.m. they had settled down and were resting in various places in the box. At that hour, the two caterpillars were still working in their cocoons.

Next morning, the more advanced cocoon seemed almost finished, and had shifted slightly from its former position. The cocoon was now papery and light brownish in colour. The open end had been closed up. The other caterpillar was resting in its partly-made cocoon, and as the chilly morning became warmer it began to work on the cocoon again. Other caterpillars in the box, with the exception of one which had started to make a cocoon, were still resting in the same places as they were the previous evening. Silken threads were attached in straight lines to the box, then others were woven across into a pattern like a net.

That evening the cocoons of the two earlier caterpillars were finished and when held up to the light the caterpillars could be seen in silhouette, and both were motionless. Tiny light brown ants prey on the cocoons if care is not taken. One cocoon had a tiny pin-sized hole in it, made by the ants, through which they entered and destroyed the pupa.

By September 21 all of the remaining caterpillars had made their cocoons. At times when the cocoons were handled the caterpillars within began a rapid whirring sound. When placed in the box again the caterpillars became quiet.

In the late afternoon of March 10, 1952, a cool, cloudy day, a perfect moth was found clinging to the wire mesh inside the box. It was large and grey with other distinguishing marks. As it clung to the wire its wings were resting vertically. Later, its wings were in a horizontal position, and at dusk the resting moth became active and began to flutter rapidly about in the box. It continued in this manner for almost an hour, then rested again.

On March 13, at noon, a larger and different grey moth was clinging to the wire inside the box. One wing was crumpled, and did not straighten out later, but remained abnormal. Besides being larger than the first one, this moth had a very stout body, and was differently marked. It was a female.

At dusk a third moth, a male, emerged from its cocoon. During the bright moonlight evening the moths fluttered about in the box. By March 23 eight moths had emerged from their cocoons. Three females and five males.

The description of the adult moths is as follows:

Female: length across expanded wings approximately 3 inches. Upper wings, finely haired, grey with darker grey wavy markings, border of light silver grey wavy markings; two white spots, one large and one small, on each wing. Under pair of wings, grey, with a border of silver grey wavy markings; Length of body,  $1\frac{1}{8}$  inch; body, stout and hairy, head part covered in bristling light grey, dark grey and brown hairs; rest of the body, from half way down covered with bristling orange hairs; underpart of body, head and thorax hairy, pale orange-brown and grey with dark, almost black bands. Down the centre of the abdomen, a lighter marking of pale orange-brown with some grey hairs.

Male: length across expanded wings, approximately 2½ inches. Upper wings finely haired, grey, with darker grey wavy markings, two white spots, one large and one small on each wing. Under pair of wings, where joined to the body, light grey and lemon yellow, the yellow colour fading out half way along the wings where a wavy narrow band of grey and a grey spot terminate the delicate yellow colour, from there on the wings are grey. Length of body, 1 inch, slender, hairy, brown with white and light grey hairs. Half way down the body, the brown hairs end, the latter part is covered with orange hairs with some white hairs

at the posterior end. Underpart of body, head and thorax, deep brown, other half of body pure white.

The first hatched female laid over one hundred fawn-coloured eggs, while in captivity.

Searches for cocoons in the wild were rather unsuccessful. On rare occasions, one or two cocoons were found attached by silken threads at one end to old stumps, under bark, or on dry trees. Usually they were a few feet up from the ground. Most of the cocoons had small holes in them, no doubt made by small ants or other predators, or parasites.

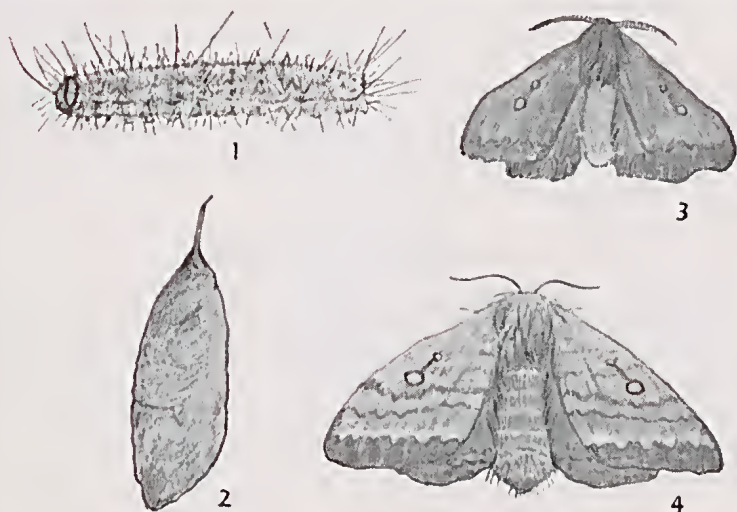
On May 17, 1952, a further series of observations was begun on this species of caterpillar.

The following winter months were very dry and there seemed to be a scarcity of caterpillars. In May, a solitary individual about an inch in length was collected on a jam tree, and fresh phyllodes were fed to it daily. The little caterpillar seemed contented in captivity and usually climbed the jam branch to feed at 7.15 p.m., or a few minutes later. After feeding it rested on the side of the box. Another caterpillar was collected on a jam tree on June 23.

In August, a fine, large specimen was found under bark on a jam tree. Then later that month a fourth one was collected. All were contented and prospered in captivity.

By September 21, all of the caterpillars had made cocoons, with a short period between each. The cocoons were cylindrical and papery and, as before, attached by silken threads to the floor or sides of the box.

During September, when the box containing the cocoons was



*Anthela xantharcha*, two-thirds natural size.

1—Caterpillar. 2—Cocoon. 3—Male moth. 4—Female moth.

—M. B. Mills del

shifted to a new position, one caterpillar in its cocoon began a whirring, clicking noise. This appears to be made when the caterpillar, feeling disturbed, begins either to turn rapidly around, or from side to side in the cocoon.

On the night of March 16, 1953, after a thunder storm, two female moths emerged from their cocoons. Next evening, one of the moths laid her eggs, which were attached with a sticky substance to the wire mesh on the box. Moths also emerged from the two remaining cocoons.

A search about trees and other likely places did not reveal any more of that season's cocoons. Perhaps the dry season may have been the reason for the scarcity of the caterpillars and their cocoons.

During the morning of March 30, hairy caterpillars about  $\frac{1}{4}$  inch in length hatched from the moth's eggs. Fresh jam phyllodes were fed to the young caterpillars which soon moved up the jam branch to feed on the phyllodes. After feeding, they rested on the box top and sides. The little caterpillars were voracious feeders and soon began to grow. The caterpillars were kept in captivity until May 18 when the box, with the lid off, was placed at a jam tree in natural surroundings. The caterpillars would leave the box at evening, usually about 7.30 p.m. and ascend the jam tree to feed on the phyllodes. Many of the caterpillars returned to the box after feeding and they continued life in this way during the following months.

On October 7 about fifty very large caterpillars, all about 3 inches in length, were resting in the box. A small number of cocoons had been made in a group at the bottom of the box and two cocoons had been made on a wheat sack which was used for covering the box. A large amount of "dirt" and cast skins had accumulated in the box. Only two caterpillars were found resting outside on a piece of board. The winter rains had been exceptionally heavy, but it apparently had not affected the caterpillars.

At the end of October only a small number of caterpillars remained in the box. By November 17 there were no caterpillars in the box, but a large number of cocoons were in a group at the bottom of it.

## FROM FIELD AND STUDY

**Name of a Jockey Beetle—a Correction.**—In my article on the jockey beetle in the *W.A. Naturalist*, vol. 2, no. 6, p. 132, I referred to it as *Chlamydopsis duboulayi*. The correct name for the species discussed and figured is, however, *Chlamydopsis loculosa* Lea. The error was brought about by comparing my material with a mis-named specimen in the collection of the W.A. Museum.

—R. P. McMILLAN, Cannington.

**Spotted Harrier at Busseton.**—In his review of the bird irruptions in 1952 D. L. Serventy stated that the Spotted Harrier (*Circus assimilis*) had not hitherto been recorded in the South-